LEAD IN MANHOLE SEDIMENTS

Region 8 received a letter from a New England environmental consulting firm regarding a process used to "treat" utility manhole sediments (mostly lead contamination) in situ, using a spray precipitating agent which is claimed to stabilize lead contaminants. The "stabilized" soil is then removed and disposed of as non-hazardous.

Nancy Morlock (Region 8) inquired whether forum members have been involved with cases where companies have treated utility manhole sediments in situ. Was a RCRA permit required, or not? If not, was permit-exempt treatment conducted per 262.34 generator accumulation provisions, or per another provision?

Dave Reisman (NRMRL/Cinc.) responded with the following information on a chemical additive called LEADX™ that can be used to treat lead and other heavy metals in situ:

LEADX™

Technology Description

1. Introduction

LEADX™ is a chemical additive that was developed to treat material contaminated with lead or other heavy metals in situ. LEADX™ may be added directly to soil or incorporated into sandblasting materials or paint thinners. LEADX™ penetrates the contaminated material and chemically bonds with heavy metal contaminant to form an insoluble, non-leachable compound. The vendor claims that once bonded, the lead cannot be absorbed by plants or animals and is chemically rendered immobile. According to the vendor, it has been used in the following applications for the treatment of lead (D166976, p.2):

- Recycling of computer monitor or television cathode ray tubes (CRT) or other lead contaminated glass;
- In situ soil remediation;
- Lead paint removal and remediation; and
- Recycling of lead contaminated sludge.

2. History and Stage of Development

LEADX™ was developed and is manufactured by Proactive Environmental Research and Development, Inc. (PERDI). PERDI indicates that patents are pending in the US for processing and treatment of CRT such as those used for displays in televisions and computer monitors. Patents are also pending in the US for the use of LEADX™ as an abrasive additive for sandblasting to immobilize lead from lead paint residue. LEADX™ is distributed Proactive Applied Solutions Corporation (PASCO). EnviroBest Corporation markets two paint removers containing LEADX™ called PR-40/LEADX™ and PR-40AF/LEADX™ (D166976, p. 2; D20236Y, p. 4 & 5).

3. Process Description

LEADX™ is a slightly-soluble granular chemical that may be added directly to contaminated soil or incorporated into paint thinners or sandblasting materials. The slightly-soluble LEADX™ penetrates the contaminated material. LEADX™ bonds with the lead or other heavy metals to form an insoluble, nonleachable compound such as hydropyromorphite. The vendor claims that once bonded, the lead cannot be absorbed by plants or animals and is chemically rendered immobile. According to the vendor, the reaction between the LEADX™ and the heavy metals occurs immediately upon contact (D166976, p.1; D19108M, p. 1; D193764, 1; D20236Y, p. 7).

EnviroBest Corporation produces PR-40/LEADX™ for the removal and immobilization of lead-based paints and PR-40 AF/LEADX™ for the treatment of lead-based paints under other types of paint. Both

types of paint removers are sprayed on the wall, allowed to soak through the paint to the substrate, and removed using a power washer or scraper (D20236Y).

According to the vendor, LEADX™ has the following advantages:

- Stabilizes lead in abrasive waste forming a permanent, stable chemical bond;
- Passes the Toxicity Characteristic Leaching Procedure (TCLP) and Multiple Extraction Procedures (MEP);
- Is cost competitive with other disposal techniques;
- Has a neutral pH;
- Does not mask, dilute, or encapsulate lead debris;
- May be used wet or dry and has an unlimited shelf life; and
- Works with standard blasting and spraying equipment (D193764).

4. Involvement with Government Programs/Regulatory Acceptance

The demonstration of EnviroBest Corporation's PR-40/LEADX™ in Butte, Montana, was funded by the U.S. Environmental Protection Agency's (EPA's) Office of Research and Development and the U.S. Department of Energy (DOE). The City of Amarillo, Texas used LEADX™ as a sandblasting additive to remove lead from an elevated water storage tank (D20235X, p. 1; D20234W, p. 4).
Jim Harrington (NYSDEC) noted that New York has not been faced with the question before but would have severe reservations because of resuspension issues. Stabilization involves mixing of the contaminated soil with the stabilizing agent. Assuming the contaminated material is at the water/sediment interface, this mixing will cause the contaminated material to be resuspended into the water column. If the "sediment" is so deep that this could not happen, an argument can be made that you are not stabilizing sediment, but underlying soil in the saturated zone - which has been done before. However, even if the contamination is deep, you still will have to deal with suspension of sediment when the mixer enters and exits the sediment from the water column.

Gene Keepper (Region 6) has found some documents dealing with in situ phosphate treatment and will send a bibliography to Keith Arnold to be included in the minutes.